

Fetching_Finance_Ts_Data

July 10, 2022

0.0.1 Libraries For Fetching Time Series Data

- yfinance
- yahoo_fin
- pandas-datareader
- alpha vantage

0.0.2 Using Yfinance

- https://finance.yahoo.com/lookup?guccounter=1&guce_referrer=aHR0cHM6Ly93d3cuZ29vZ2xlLmNvbS8&RW7Jc1RPG-bnX5gVtkUVTYjSyaAemS_8wCe8oyX_axWtZFY09Borj32n8tj0R9b5rfQ6uD2974AhTcPxK

```
[1]: # Load Pkg
import yfinance as yf
```

```
[2]: # Check Methods and Attrib
dir(yf)
```

```
[2]: ['Ticker',
      'Tickers',
      '__all__',
      '__author__',
      '__builtins__',
      '__cached__',
      '__doc__',
      '__file__',
      '__loader__',
      '__name__',
      '__package__',
      '__path__',
      '__spec__',
      '__version__',
      'base',
      'download',
      'multi',
      'pdr_override',
      'shared',
      'ticker',
      'tickers',
```

```
'utils',  
'version']
```

```
[3]: # Fetching Data  
tsla = yf.Ticker("TSLA")
```

```
[4]: tsla
```

```
[4]: yfinance.Ticker object <TSLA>
```

```
[5]: # Methods  
dir(tsla)
```

```
[5]: ['__class__',  
      '__delattr__',  
      '__dict__',  
      '__dir__',  
      '__doc__',  
      '__eq__',  
      '__format__',  
      '__ge__',  
      '__getattribute__',  
      '__gt__',  
      '__hash__',  
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      '__le__',  
      '__lt__',  
      '__module__',  
      '__ne__',  
      '__new__',  
      '__reduce__',  
      '__reduce_ex__',  
      '__repr__',  
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      '__sizeof__',  
      '__str__',  
      '__subclasshook__',  
      '__weakref__',  
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      '_balancesheet',  
      '_base_url',  
      '_calendar',  
      '_cashflow',  
      '_download_options',  
      '_earnings',  
      '_earnings_dates',
```

'_earnings_history',
'_expirations',
'_financials',
'_fundamentals',
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'_history',
'_info',
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'_isin',
'_major_holders',
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'_news',
'_options2df',
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'_scrape_url',
'_shares',
'_sustainability',
'actions',
'analysis',
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'calendar',
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'get_earnings_dates',
'get_earnings_history',
'get_financials',
'get_info',
'get_institutional_holders',
'get_isin',
'get_major_holders',
'get_mutualfund_holders',
'get_news',
'get_recommendations',
'get_shares',

```

'get_splits',
'get_sustainability',
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'news',
'option_chain',
'options',
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'quarterly_balancesheet',
'quarterly_cashflow',
'quarterly_earnings',
'quarterly_financials',
'recommendations',
'session',
'shares',
'splits',
'stats',
'sustainability',
'ticker']

```

```

[6]: # Get Historical Data as Pandas DataFrame
      tsla.history()

```

```

[6]:
      Date      Open      High      Low      Close      Volume \
2022-06-09  748.020020  766.640015  717.979980  719.119995  32163800
2022-06-10  705.469971  718.500000  683.739990  696.690002  32512200
2022-06-13  669.500000  679.900024  644.049988  647.210022  34255800
2022-06-14  654.859985  678.989990  635.210022  662.669983  32662900
2022-06-15  662.750000  706.989990  654.450012  699.000000  39710600
2022-06-16  668.210022  675.500000  626.080017  639.299988  35796900
2022-06-17  640.299988  662.909973  639.590027  650.280029  30810900
2022-06-21  673.809998  730.729980  673.000000  711.109985  40931000
2022-06-22  703.510010  740.500000  701.479980  708.260010  33702500
2022-06-23  713.719971  717.950012  685.909973  705.210022  34734200
2022-06-24  712.409973  738.200012  708.260010  737.119995  31866500
2022-06-27  748.099976  756.210022  727.700012  734.760010  29726100
2022-06-28  733.450012  749.909973  697.030029  697.989990  30130400
2022-06-29  691.500000  693.520020  666.820007  685.469971  27632400
2022-06-30  673.530029  688.369995  656.590027  673.419983  31533500
2022-07-01  681.000000  690.690002  666.359985  681.789978  24781500
2022-07-05  669.000000  699.440002  648.500000  699.200012  28193700
2022-07-06  692.340027  703.690002  681.559998  695.200012  23951200

```

2022-07-07	701.760010	736.090027	696.630005	733.630005	27310200
2022-07-08	727.000000	764.940002	723.479980	752.289978	33343700

	Dividends	Stock Splits
Date		
2022-06-09	0	0
2022-06-10	0	0
2022-06-13	0	0
2022-06-14	0	0
2022-06-15	0	0
2022-06-16	0	0
2022-06-17	0	0
2022-06-21	0	0
2022-06-22	0	0
2022-06-23	0	0
2022-06-24	0	0
2022-06-27	0	0
2022-06-28	0	0
2022-06-29	0	0
2022-06-30	0	0
2022-07-01	0	0
2022-07-05	0	0
2022-07-06	0	0
2022-07-07	0	0
2022-07-08	0	0

```
[7]: type(tsla.history())
```

```
[7]: pandas.core.frame.DataFrame
```

```
[8]: # Check Datatypes
tsla.history().dtypes
```

```
[8]: Open          float64
High           float64
Low            float64
Close          float64
Volume         int64
Dividends      int64
Stock Splits   int64
dtype: object
```

```
[9]: # Get Balance Sheet
tsla.balance_sheet
```

```
[9]:
```

	2021-12-31	2020-12-31	2019-12-31	\
Intangible Assets	2.570000e+08	3.130000e+08	3.390000e+08	

Capital Surplus	2.980300e+10	2.726000e+10	1.273600e+10
Total Liab	3.054800e+10	2.846900e+10	2.619900e+10
Total Stockholder Equity	3.018900e+10	2.222500e+10	6.618000e+09
Minority Interest	1.394000e+09	1.454000e+09	1.492000e+09
Other Current Liab	4.756000e+09	4.147000e+09	3.693000e+09
Total Assets	6.213100e+10	5.214800e+10	3.430900e+10
Common Stock	1.000000e+06	1.000000e+06	1.000000e+06
Other Current Assets	3.450000e+08	2.380000e+08	2.460000e+08
Retained Earnings	3.310000e+08	-5.399000e+09	-6.083000e+09
Other Liab	3.896000e+09	3.302000e+09	2.969000e+09
Good Will	2.000000e+08	2.070000e+08	1.980000e+08
Treasury Stock	5.400000e+07	3.630000e+08	-3.600000e+07
Other Assets	3.398000e+09	1.536000e+09	1.469000e+09
Cash	1.757600e+10	1.938400e+10	6.268000e+09
Total Current Liabilities	1.970500e+10	1.424800e+10	1.066700e+10
Short Long Term Debt	1.088000e+09	1.758000e+09	1.399000e+09
Other Stockholder Equity	5.400000e+07	3.630000e+08	-3.600000e+07
Property Plant Equipment	3.117600e+10	2.337500e+10	2.019900e+10
Total Current Assets	2.710000e+10	2.671700e+10	1.210300e+10
Net Tangible Assets	2.973200e+10	2.170500e+10	6.081000e+09
Short Term Investments	1.310000e+08	NaN	NaN
Net Receivables	1.986000e+09	1.903000e+09	1.324000e+09
Long Term Debt	4.285000e+09	8.571000e+09	1.037500e+10
Inventory	5.757000e+09	4.101000e+09	3.552000e+09
Accounts Payable	1.002500e+10	6.051000e+09	3.771000e+09
Long Term Investments	NaN	NaN	1.000000e+06

2018-12-31

Intangible Assets	2.820000e+08
Capital Surplus	1.024900e+10
Total Liab	2.342700e+10
Total Stockholder Equity	4.923000e+09
Minority Interest	1.390000e+09
Other Current Liab	2.955000e+09
Total Assets	2.974000e+10
Common Stock	NaN
Other Current Assets	1.930000e+08
Retained Earnings	-5.318000e+09
Other Liab	2.318000e+09
Good Will	6.800000e+07
Treasury Stock	-8.000000e+06
Other Assets	1.380000e+09
Cash	3.686000e+09
Total Current Liabilities	9.993000e+09
Short Long Term Debt	2.284000e+09
Other Stockholder Equity	-8.000000e+06
Property Plant Equipment	1.969100e+10

Total Current Assets	8.307000e+09
Net Tangible Assets	4.573000e+09
Short Term Investments	NaN
Net Receivables	9.490000e+08
Long Term Debt	8.461000e+09
Inventory	3.113000e+09
Accounts Payable	3.405000e+09
Long Term Investments	1.200000e+07

```
[10]: # Get Financials Per Each Quarter
      tsla.financials
```

```
[10]:
```

	2021-12-31	2020-12-31 \
Research Development	2593000000.0	1491000000.0
Effect Of Accounting Charges	None	None
Income Before Tax	6343000000.0	1154000000.0
Minority Interest	1394000000.0	1454000000.0
Net Income	5519000000.0	721000000.0
Selling General Administrative	4517000000.0	3188000000.0
Gross Profit	13606000000.0	6630000000.0
Ebit	6523000000.0	1951000000.0
Operating Income	6523000000.0	1951000000.0
Other Operating Expenses	-27000000.0	-27000000.0
Interest Expense	-358000000.0	-784000000.0
Extraordinary Items	None	None
Non Recurring	None	None
Other Items	None	None
Income Tax Expense	699000000.0	292000000.0
Total Revenue	53823000000.0	31536000000.0
Total Operating Expenses	47300000000.0	29585000000.0
Cost Of Revenue	40217000000.0	24906000000.0
Total Other Income Expense Net	-180000000.0	-797000000.0
Discontinued Operations	None	None
Net Income From Continuing Ops	5644000000.0	862000000.0
Net Income Applicable To Common Shares	5524000000.0	690000000.0

	2019-12-31	2018-12-31
Research Development	1343000000.0	1460000000.0
Effect Of Accounting Charges	None	None
Income Before Tax	-665000000.0	-1005000000.0
Minority Interest	1492000000.0	1390000000.0
Net Income	-862000000.0	-976000000.0
Selling General Administrative	2646000000.0	2835000000.0
Gross Profit	4069000000.0	4042000000.0
Ebit	80000000.0	-253000000.0
Operating Income	80000000.0	-253000000.0
Other Operating Expenses	-27000000.0	-27000000.0

Interest Expense	-725000000.0	-653000000.0
Extraordinary Items	None	None
Non Recurring	None	None
Other Items	None	None
Income Tax Expense	110000000.0	58000000.0
Total Revenue	2457800000.0	2146100000.0
Total Operating Expenses	2449800000.0	2171400000.0
Cost Of Revenue	2050900000.0	1741900000.0
Total Other Income Expense Net	-745000000.0	-752000000.0
Discontinued Operations	None	None
Net Income From Continuing Ops	-775000000.0	-1063000000.0
Net Income Applicable To Common Shares	-870000000.0	-976000000.0

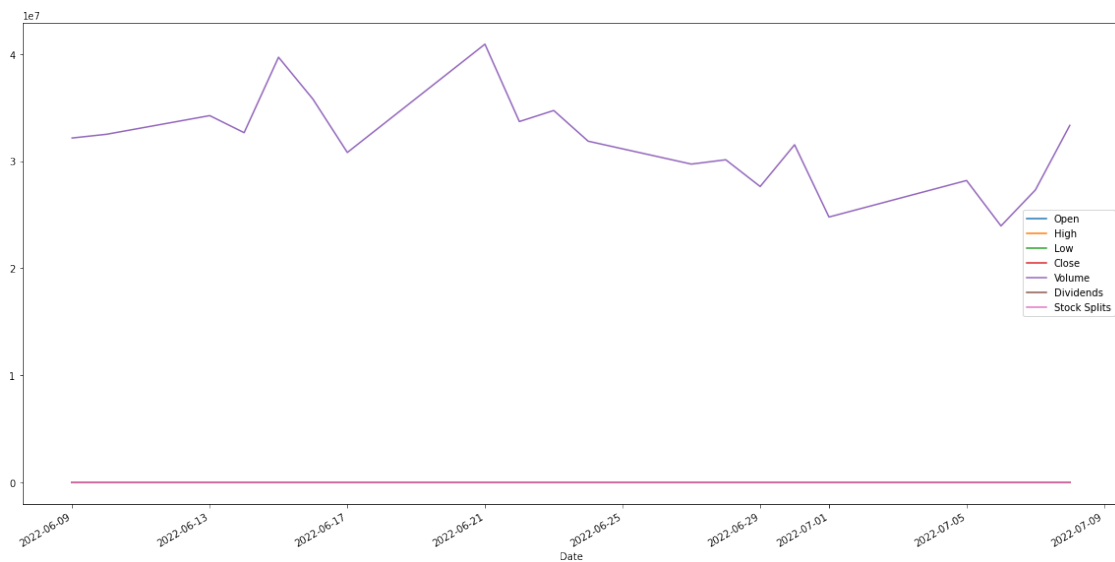
```
[11]: # Get Cash Flows
      tsla.cashflow
```

	2021-12-31	2020-12-31	\
Investments	-1.320000e+08	-1.320000e+08	
Change To Liabilities	5.371000e+09	2.423000e+09	
Total Cashflows From Investing Activities	-7.868000e+09	-3.132000e+09	
Net Borrowings	-5.732000e+09	-2.488000e+09	
Total Cash From Financing Activities	-5.203000e+09	9.973000e+09	
Change To Operating Activities	-3.014000e+09	-1.165000e+09	
Issuance Of Stock	7.070000e+08	1.268600e+10	
Net Income	5.519000e+09	7.210000e+08	
Change In Cash	-1.757000e+09	1.311800e+10	
Effect Of Exchange Rate	-1.830000e+08	3.340000e+08	
Total Cash From Operating Activities	1.149700e+10	5.943000e+09	
Depreciation	2.810000e+09	2.322000e+09	
Other Cashflows From Investing Activities	6.000000e+06	1.230000e+08	
Change To Inventory	-1.709000e+09	-4.220000e+08	
Change To Account Receivables	-1.300000e+08	-6.520000e+08	
Other Cashflows From Financing Activities	-1.780000e+08	-2.250000e+08	
Change To Netincome	2.650000e+09	2.716000e+09	
Capital Expenditures	-8.014000e+09	-3.232000e+09	
	2019-12-31	2018-12-31	
Investments	-1.320000e+08	-1.320000e+08	
Change To Liabilities	1.447000e+09	2.203000e+09	
Total Cashflows From Investing Activities	-1.436000e+09	-2.337000e+09	
Net Borrowings	7.980000e+08	8.900000e+07	
Total Cash From Financing Activities	1.529000e+09	5.740000e+08	
Change To Operating Activities	-1.000000e+09	-6.250000e+08	
Issuance Of Stock	1.111000e+09	2.960000e+08	
Net Income	-8.620000e+08	-9.760000e+08	
Change In Cash	2.506000e+09	3.120000e+08	
Effect Of Exchange Rate	8.000000e+06	-2.300000e+07	

Total Cash From Operating Activities	2.405000e+09	2.098000e+09
Depreciation	2.092000e+09	1.888000e+09
Other Cashflows From Investing Activities	4.600000e+07	4.600000e+07
Change To Inventory	-4.290000e+08	-1.023000e+09
Change To Account Receivables	-3.670000e+08	-4.970000e+08
Other Cashflows From Financing Activities	-3.800000e+08	1.890000e+08
Change To Netincome	1.524000e+09	9.690000e+08
Capital Expenditures	-1.432000e+09	-2.319000e+09

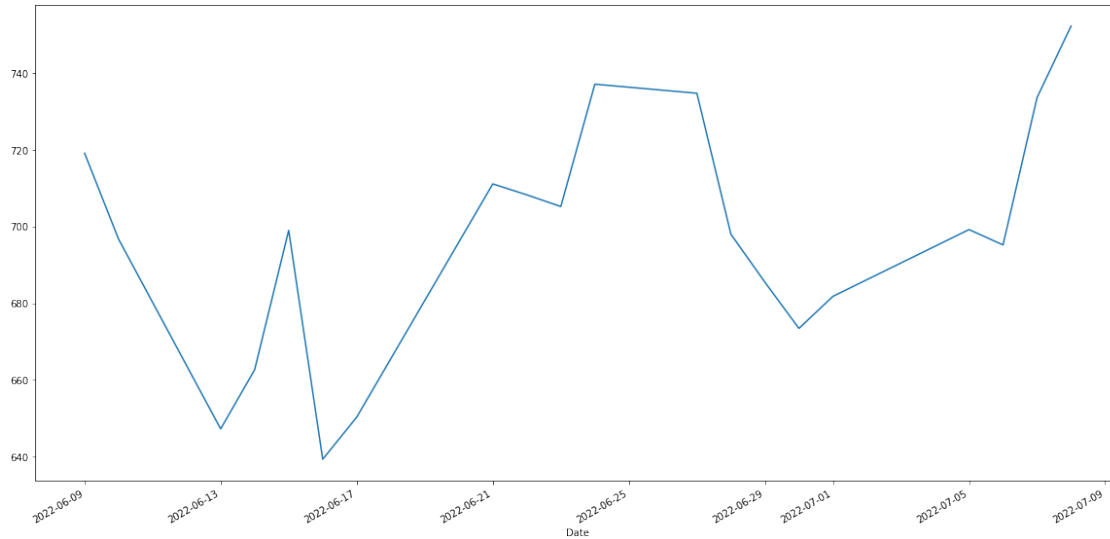
```
[12]: # Plotting Timeseries
      tsla.history().plot(kind="line",figsize=(20,10))
```

```
[12]: <AxesSubplot:xlabel='Date'>
```



```
[13]: # Plotting Timeseries for Close
      tsla.history()["Close"].plot(kind="line",figsize=(20,10))
```

```
[13]: <AxesSubplot:xlabel='Date'>
```



```
[16]: ##### Get History for a set period
      tsla.history(period="7d")
```

```
[16]:
```

	Open	High	Low	Close	Volume \
Date					
2022-06-29	691.500000	693.520020	666.820007	685.469971	27632400
2022-06-30	673.530029	688.369995	656.590027	673.419983	31533500
2022-07-01	681.000000	690.690002	666.359985	681.789978	24781500
2022-07-05	669.000000	699.440002	648.500000	699.200012	28193700
2022-07-06	692.340027	703.690002	681.559998	695.200012	23951200
2022-07-07	701.760010	736.090027	696.630005	733.630005	27310200
2022-07-08	727.000000	764.940002	723.479980	752.289978	33343700

	Dividends	Stock Splits
Date		
2022-06-29	0	0
2022-06-30	0	0
2022-07-01	0	0
2022-07-05	0	0
2022-07-06	0	0
2022-07-07	0	0
2022-07-08	0	0

NLP with Yfinance

```
[17]: # Info on TSLA
      tsla.info
```

```
[17]: {'zip': '78725',
      'sector': 'Consumer Cyclical',
      'fullTimeEmployees': 99290,
      'longBusinessSummary': 'Tesla, Inc. designs, develops, manufactures, leases, and sells electric vehicles, and energy generation and storage systems in the United States, China, and internationally. The company operates in two segments, Automotive, and Energy Generation and Storage. The Automotive segment offers electric vehicles, as well as sells automotive regulatory credits. It provides sedans and sport utility vehicles through direct and used vehicle sales, a network of Tesla Superchargers, and in-app upgrades; and purchase financing and leasing services. This segment is also involved in the provision of non-warranty after-sales vehicle services, sale of used vehicles, retail merchandise, and vehicle insurance, as well as sale of products to third party customers; services for electric vehicles through its company-owned service locations, and Tesla mobile service technicians; and vehicle limited warranties and extended service plans. The Energy Generation and Storage segment engages in the design, manufacture, installation, sale, and leasing of solar energy generation and energy storage products, and related services to residential, commercial, and industrial customers and utilities through its website, stores, and galleries, as well as through a network of channel partners. This segment also offers service and repairs to its energy product customers, including under warranty; and various financing options to its solar customers. The company was formerly known as Tesla Motors, Inc. and changed its name to Tesla, Inc. in February 2017. Tesla, Inc. was incorporated in 2003 and is headquartered in Austin, Texas.',
      'city': 'Austin',
      'phone': '(512) 516-8177',
      'state': 'TX',
      'country': 'United States',
      'companyOfficers': [],
      'website': 'https://www.tesla.com',
      'maxAge': 1,
      'address1': '13101 Tesla Road',
      'industry': 'Auto Manufacturers',
      'ebitdaMargins': 0.20424,
      'profitMargins': 0.13505,
      'grossMargins': 0.27096,
      'operatingCashflow': 13850999808,
      'revenueGrowth': 0.805,
      'operatingMargins': 0.1549,
      'ebitda': 12702000128,
      'targetLowPrice': 67,
      'recommendationKey': 'buy',
      'grossProfits': 13606000000,
      'freeCashflow': 7054624768,
      'targetMedianPrice': 950,
      'currentPrice': 752.29,
```

'earningsGrowth': 6.315,
 'currentRatio': 1.354,
 'returnOnAssets': 0.10118,
 'numberOfAnalystOpinions': 39,
 'targetMeanPrice': 893.46,
 'debtToEquity': 19.841,
 'returnOnEquity': 0.28261,
 'targetHighPrice': 1620,
 'totalCash': 18012999680,
 'totalDebt': 7024999936,
 'totalRevenue': 62189998080,
 'totalCashPerShare': 17.387,
 'financialCurrency': 'USD',
 'revenuePerShare': 61.927,
 'quickRatio': 0.953,
 'recommendationMean': 2.5,
 'exchange': 'NMS',
 'shortName': 'Tesla, Inc.',
 'longName': 'Tesla, Inc.',
 'exchangeTimezoneName': 'America/New_York',
 'exchangeTimezoneShortName': 'EDT',
 'isEsgPopulated': False,
 'gmtOffsetMilliseconds': '-14400000',
 'quoteType': 'EQUITY',
 'symbol': 'TSLA',
 'messageBoardId': 'finmb_27444752',
 'market': 'us_market',
 'annualHoldingsTurnover': None,
 'enterpriseToRevenue': 12.066,
 'beta3Year': None,
 'enterpriseToEbitda': 59.076,
 '52WeekChange': 0.09711242,
 'morningStarRiskRating': None,
 'forwardEps': 15.89,
 'revenueQuarterlyGrowth': None,
 'sharesOutstanding': 1036390016,
 'fundInceptionDate': None,
 'annualReportExpenseRatio': None,
 'totalAssets': None,
 'bookValue': 32.901,
 'sharesShort': 26882235,
 'sharesPercentSharesOut': 0.025899999,
 'fundFamily': None,
 'lastFiscalYearEnd': 1640908800,
 'heldPercentInstitutions': 0.43163,
 'netIncomeToCommon': 8403999744,
 'trailingEps': 7.78,

'lastDividendValue': None,
 'SandP52WeekChange': -0.110670686,
 'priceToBook': 22.865261,
 'heldPercentInsiders': 0.17261,
 'nextFiscalYearEnd': 1703980800,
 'yield': None,
 'mostRecentQuarter': 1648684800,
 'shortRatio': 0.85,
 'sharesShortPreviousMonthDate': 1652400000,
 'floatShares': 856832008,
 'beta': 2.112388,
 'enterpriseValue': 750380974080,
 'priceHint': 2,
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 'lastSplitDate': 1598832000,
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 'legalType': None,
 'lastDividendDate': None,
 'morningStarOverallRating': None,
 'earningsQuarterlyGrowth': 6.575,
 'priceToSalesTrailing12Months': 12.536836,
 'dateShortInterest': 1655251200,
 'pegRatio': 1.43,
 'ytdReturn': None,
 'forwardPE': 47.34361,
 'lastCapGain': None,
 'shortPercentOfFloat': 0.0317,
 'sharesShortPriorMonth': 25651653,
 'impliedSharesOutstanding': 0,
 'category': None,
 'fiveYearAverageReturn': None,
 'previousClose': 733.63,
 'regularMarketOpen': 727,
 'twoHundredDayAverage': 910.32983,
 'trailingAnnualDividendYield': 0,
 'payoutRatio': 0,
 'volume24Hr': None,
 'regularMarketDayHigh': 764.9399,
 'navPrice': None,
 'averageDailyVolume10Day': 28846920,
 'regularMarketPreviousClose': 733.63,
 'fiftyDayAverage': 740.2918,
 'trailingAnnualDividendRate': 0,
 'open': 727,
 'toCurrency': None,
 'averageVolume10days': 28846920,
 'expireDate': None,

```

'algorithm': None,
'dividendRate': None,
'exDividendDate': None,
'circulatingSupply': None,
'startDate': None,
'regularMarketDayLow': 723.4843,
'currency': 'USD',
'trailingPE': 96.695366,
'regularMarketVolume': 33951362,
'lastMarket': None,
'maxSupply': None,
'openInterest': None,
'marketCap': 779665801216,
'volumeAllCurrencies': None,
'strikePrice': None,
'averageVolume': 29793644,
'dayLow': 723.4843,
'ask': 770,
'askSize': 1200,
'volume': 33951362,
'fiftyTwoWeekHigh': 1243.49,
'fromCurrency': None,
'fiveYearAvgDividendYield': None,
'fiftyTwoWeekLow': 620.57,
'bid': 751.9,
'tradeable': False,
'dividendYield': None,
'bidSize': 900,
'dayHigh': 764.9399,
'coinMarketCapLink': None,
'regularMarketPrice': 752.29,
'preMarketPrice': None,
'logo_url': 'https://logo.clearbit.com/tesla.com',
'trailingPegRatio': 1.6596}

```

```

[18]: # NLP on TSLA
      tsla.news

```

```

[18]: [{'uuid': 'f91eec01-b14b-31b9-9d0a-da7058aa6ae0',
        'title': 'Tim Cook Snubs Tesla and Elon Musk With a Big Rival',
        'publisher': 'TheStreet.com',
        'link': 'https://finance.yahoo.com/m/f91eec01-b14b-31b9-9d0a-da7058aa6ae0/tim-cook-snubs-tesla-and-elon.html',
        'providerPublishTime': 1657396800,
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```

```

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  'title': 'Dow Jones Futures: Market Rally At Make-Or-Break Point; Elon Musk
Moves To Terminate Twitter Deal',
  'publisher': 'Investor's Business Daily',
  'link': 'https://finance.yahoo.com/m/57728c3f-4da7-3216-a90c-6310f403a858/dow-
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  '^GSPC',
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  'COMP',
  'UNH',
  'FTNT',
  'CNC',

```

```

    'SEDG',
    'BABA']]],
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    'publisher': 'Barrons.com',
    'link':
    'https://finance.yahoo.com/m/aa265e71-e391-39dc-88a1-446160e81575/elon-
musk%E2%80%99s-move-to-pull-out.html',
    'providerPublishTime': 1657390020,
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    'publisher': "Investor's Business Daily",
    'link':
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~B/aD01NjM7dz0xMDAw02FwcGlkPXl0YWNoeW9u/https://media.zenfs.com/en/ibd.com/f9e05
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```



```

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    'link': 'https://finance.yahoo.com/news/elon-bizarre-twitter-takeover-
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/https://s.yimg.com/uu/api/res/1.2/A4VGZ9oRziYtbJ52Zw0yHA--
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u/api/res/1.2/A4VGZ9oRziYtbJ52Zw0yHA---B/aD0zNTU5O3c9NTIzNjthcHBpZD15dGFjaHlrbg-
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    'publisher': 'Motley Fool',
    'link': 'https://finance.yahoo.com/m/1e9f390c-ad8a-35bc-9ff0-a6d69c253dc0/why-
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    'providerPublishTime': 1657384015,
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    'height': 933,

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```

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    'title': 'IPO Edge's Jannarone: Seek Out Leaders Like Allego in Rough IPO
Market - Cheddar TV',
    'publisher': 'IPO-Edge.com',
    'link': 'https://finance.yahoo.com/news/ipo-edge-jannarone-seek-
leaders-155753309.html',
    'providerPublishTime': 1657382273,
    'type': 'STORY',
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/https://media.zenfs.com/en/ipo_edge_com_346/344cd3b8448b2f513b425392fe25d47e',
    'width': 140,
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    'relatedTickers': ['ALLG', 'TSLA', 'BLNK']},
    {'uuid': 'a9502b22-158e-375d-8693-7d7ef027030e',
    'title': 'Ford Is an EV Powerhouse. Thank Jim Farley.',
    'publisher': 'Barrons.com',
    'link':
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powerhouse..html',
    'providerPublishTime': 1657374240,
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```

```

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bfaa3a6ced66819aa7a23cdc34eef99',
    'width': 140,
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    'tag': '140x140'}}],
    'relatedTickers': ['F', 'GM', 'TSLA']}]

```

```

[19]: # Convert to DataFrame
import pandas as pd
df = pd.DataFrame(tsla.news)

```

```

[20]: df

```

```

[20]:
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0  f91eec01-b14b-31b9-9d0a-da7058aa6ae0
1  57728c3f-4da7-3216-a90c-6310f403a858
2  aa265e71-e391-39dc-88a1-446160e81575
3  122449e8-b87b-33a5-ae22-63ae3842e91b
4  4db43363-ce16-37a1-9fe3-de108c1218d6
5  1e9f390c-ad8a-35bc-9ff0-a6d69c253dc0
6  9c9a12dc-d199-3fe2-988f-753435784002
7  a9502b22-158e-375d-8693-7d7ef027030e

                                title \
0  Tim Cook Snubs Tesla and Elon Musk With a Big ...
1  Dow Jones Futures: Market Rally At Make-Or-Bre...
2  Elon Musk's Move to Pull Out of Twitter Deal I...
3  These Are The 5 Best EV Stocks To Buy And Watc...
4  How Elon's bizarre Twitter takeover saga could...
5  Why Tesla Is Down Nearly 30% This Year
6  IPO Edge's Jannarone: Seek Out Leaders Like Al...
7  Ford Is an EV Powerhouse. Thank Jim Farley.

                                publisher \
0  TheStreet.com
1  Investor's Business Daily
2  Barrons.com
3  Investor's Business Daily
4  Fortune
5  Motley Fool

```

```
6          IPO-Edge.com
7          Barrons.com
```

```
link providerPublishTime \
0 https://finance.yahoo.com/m/f91eec01-b14b-31b9... 1657396800
1 https://finance.yahoo.com/m/57728c3f-4da7-3216... 1657394143
2 https://finance.yahoo.com/m/aa265e71-e391-39dc... 1657390020
3 https://finance.yahoo.com/m/122449e8-b87b-33a5... 1657386659
4 https://finance.yahoo.com/news/elon-bizarre-tw... 1657385250
5 https://finance.yahoo.com/m/1e9f390c-ad8a-35bc... 1657384015
6 https://finance.yahoo.com/news/ipo-edge-jannar... 1657382273
7 https://finance.yahoo.com/m/a9502b22-158e-375d... 1657374240
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```
type thumbnail \
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```

```
relatedTickers
0 [AAPL, TSLA, RIVN]
1 [^DJI, MCK, ^GSPC, TSLA, COMP, UNH, FTNT, CNC,...
2 [TSLA, TWTR]
3 [BYDDY, TSLA, XPEV]
4 [TWTR, TSLA]
5 [TSLA]
6 [ALLG, TSLA, BLNK]
7 [F, GM, TSLA]
```

```
[21]: df["title"]
```

```
[21]: 0 Tim Cook Snubs Tesla and Elon Musk With a Big ...
1 Dow Jones Futures: Market Rally At Make-Or-Bre...
2 Elon Musk's Move to Pull Out of Twitter Deal I...
3 These Are The 5 Best EV Stocks To Buy And Watc...
4 How Elon's bizarre Twitter takeover saga could...
5 Why Tesla Is Down Nearly 30% This Year
6 IPO Edge's Jannarone: Seek Out Leaders Like Al...
7 Ford Is an EV Powerhouse. Thank Jim Farley.
Name: title, dtype: object
```

Using Multiple Tickers

- returns tickers object with a dict

```
[22]: mult_tickers = yf.Tickers("tsla twtr meta")
```

```
[23]: mult_tickers
```

```
[23]: yfinance.Tickers object <TSLA,TWTR,META>
```

```
[24]: type(mult_tickers.tickers)
```

```
[24]: dict
```

```
[25]: mult_tickers.tickers.keys()
```

```
[25]: dict_keys(['TSLA', 'TWTR', 'META'])
```

```
[26]: mult_tickers.tickers["TWTR"].info
```

```
[26]: {'zip': '94103',
      'sector': 'Communication Services',
      'fullTimeEmployees': 7500,
      'longBusinessSummary': "Twitter, Inc. operates as a platform for public self-expression and conversation in real-time. The company's primary product is Twitter, a platform that allows users to consume, create, distribute, and discover content. It also provides promoted products that enable advertisers to promote brands, products, and services, as well as enable advertisers to target an audience based on various factors, including who an account follows and actions taken on its platform, such as Tweets created and engagement with Tweets. Its promoted products consist of promoted ads and Twitter Amplify, Follower Ads, and Twitter takeover. In addition, the company offers monetization products for creators, including Tips to directly send small one-time payments on Twitter using various payment methods, including bitcoin; Super Follows, a paid monthly subscription, which includes bonus content, exclusive previews, and perks as a way to support and connect with creators on Twitter; and Ticketed Spaces to support creators on Twitter for their time and effort in hosting, speaking, and moderating the public conversation on Twitter Spaces. Further, it offers products for developers and data partners comprising Twitter Developer Platform, a platform that enables developers to build tools for people and businesses using its public application programming interface; and paid access to Twitter data for partners with commercial use cases. Twitter, Inc. was founded in 2006 and is based in San Francisco, California.",
      'city': 'San Francisco',
      'phone': '415 222 9670',
      'state': 'CA',
      'country': 'United States',
      'companyOfficers': [],
      'website': 'https://www.twitter.com',
      'maxAge': 1,
```

'address1': '1355 Market Street',
 'industry': 'Internet Content & Information',
 'address2': 'Suite 900',
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 'grossMargins': 0.633,
 'operatingCashflow': 368596000,
 'revenueGrowth': 0.159,
 'operatingMargins': 0.01773,
 'ebitda': 546526016,
 'targetLowPrice': 33,
 'recommendationKey': 'hold',
 'grossProfits': 3279972000,
 'freeCashflow': 168565744,
 'targetMedianPrice': 54,
 'currentPrice': 36.81,
 'earningsGrowth': 6.681,
 'currentRatio': 6.577,
 'returnOnAssets': 0.0040700003,
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 'targetMeanPrice': 49.3,
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 'returnOnEquity': 0.03282,
 'targetHighPrice': 60,
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 'totalDebt': 6626464768,
 'totalRevenue': 5242447872,
 'totalCashPerShare': 8.209,
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 'quickRatio': 6.343,
 'recommendationMean': 3,
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 'shortName': 'Twitter, Inc.',
 'longName': 'Twitter, Inc.',
 'exchangeTimezoneName': 'America/New_York',
 'exchangeTimezoneShortName': 'EDT',
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 'market': 'us_market',
 'annualHoldingsTurnover': None,
 'enterpriseToRevenue': 5.426,
 'beta3Year': None,
 'enterpriseToEbitda': 52.043,

'52WeekChange': -0.47308904,
 'morningStarRiskRating': None,
 'forwardEps': 1.31,
 'revenueQuarterlyGrowth': None,
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 'fundInceptionDate': None,
 'annualReportExpenseRatio': None,
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 'heldPercentInsiders': 0.16961999,
 'nextFiscalYearEnd': 1703980800,
 'yield': None,
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 'legalType': None,
 'lastDividendDate': None,
 'morningStarOverallRating': None,
 'earningsQuarterlyGrowth': 6.548,
 'priceToSalesTrailing12Months': 5.3657193,
 'dateShortInterest': 1655251200,
 'pegRatio': 0.23,
 'ytdReturn': None,
 'forwardPE': 28.09924,
 'lastCapGain': None,
 'shortPercentOfFloat': 0.0454,
 'sharesShortPriorMonth': 33326858,
 'impliedSharesOutstanding': 0,
 'category': None,
 'fiveYearAverageReturn': None,

'previousClose': 38.79,
'regularMarketOpen': 37.51,
'twoHundredDayAverage': 44.43385,
'trailingAnnualDividendYield': 0,
'payoutRatio': 0,
'volume24Hr': None,
'regularMarketDayHigh': 37.55,
'navPrice': None,
'averageDailyVolume10Day': 10429500,
'regularMarketPreviousClose': 38.79,
'fiftyDayAverage': 40.8766,
'trailingAnnualDividendRate': 0,
'open': 37.51,
'toCurrency': None,
'averageVolume10days': 10429500,
'expireDate': None,
'algorithm': None,
'dividendRate': None,
'exDividendDate': None,
'circulatingSupply': None,
'startDate': None,
'regularMarketDayLow': 36.8,
'currency': 'USD',
'trailingPE': 153.37502,
'regularMarketVolume': 19113364,
'lastMarket': None,
'maxSupply': None,
'openInterest': None,
'marketCap': 28129503232,
'volumeAllCurrencies': None,
'strikePrice': None,
'averageVolume': 39807196,
'dayLow': 36.8,
'ask': 35.05,
'askSize': 1400,
'volume': 19113364,
'fiftyTwoWeekHigh': 73.34,
'fromCurrency': None,
'fiveYearAvgDividendYield': None,
'fiftyTwoWeekLow': 31.3,
'bid': 35.03,
'tradeable': False,
'dividendYield': None,
'bidSize': 1800,
'dayHigh': 37.55,
'coinMarketCapLink': None,
'regularMarketPrice': 36.81,


```
'preMarketPrice': None,
'logo_url': 'https://logo.clearbit.com/twitter.com'}
```

0.0.3 Downloading Data

```
[27]: yf.download("Snow")
```

```
[*****100%*****] 1 of 1 completed
```

```
[27]:
```

	Open	High	Low	Close	Adj Close	\
Date						
2020-09-16	245.000000	319.000000	231.110001	253.929993	253.929993	
2020-09-17	230.759995	241.500000	215.240005	227.539993	227.539993	
2020-09-18	235.000000	249.000000	218.589996	240.000000	240.000000	
2020-09-21	230.000000	241.500000	218.600006	228.850006	228.850006	
2020-09-22	238.500000	239.000000	225.149994	235.160004	235.160004	
...	
2022-07-01	140.085007	146.669998	139.009995	144.529999	144.529999	
2022-07-05	142.000000	155.600006	140.050003	154.899994	154.899994	
2022-07-06	154.960007	161.279999	152.119995	154.000000	154.000000	
2022-07-07	155.059998	159.610001	152.160004	159.070007	159.070007	
2022-07-08	156.270004	164.779999	153.100006	159.679993	159.679993	

	Volume
Date	
2020-09-16	36099700
2020-09-17	11907500
2020-09-18	7475400
2020-09-21	5524900
2020-09-22	3889100
...	...
2022-07-01	5785400
2022-07-05	8422200
2022-07-06	7381200
2022-07-07	5823100
2022-07-08	6298900

```
[456 rows x 6 columns]
```

```
[28]: # Save as csv
snow = yf.download("Snow")
snow_df = pd.DataFrame(snow)
snow_df.to_csv("snow_flakes_data.csv")
```

```
[*****100%*****] 1 of 1 completed
```

```
[29]: yf.download("Databricks")
```

```
[*****100%*****] 1 of 1 completed
```

1 Failed download:

- DATABRICKS: No data found, symbol may be delisted

[29]: Empty DataFrame

Columns: [Open, High, Low, Close, Adj Close, Volume]

Index: []

- period: data period to download (Either Use period parameter or use start and end) Valid periods are: 1d, 5d, 1mo, 3mo, 6mo, 1y, 2y, 5y, 10y, ytd, max
- interval: data interval (intraday data cannot extend last 60 days) Valid intervals are: 1m, 2m, 5m, 15m, 30m, 60m, 90m, 1h, 1d, 5d, 1wk, 1mo, 3mo
- start: If not using period - Download start date string (YYYY-MM-DD) or datetime.
- end: If not using period - Download end date string (YYYY-MM-DD) or datetime.
- prepost: Include Pre and Post market data in results? (Default is False)
- auto_adjust: Adjust all OHLC automatically? (Default is True)
- actions: Download stock dividends and stock splits events? (Default is True)

```
[31]: ##### Download multiple tickers and save to csv
tickerStrings = ['AAPL', 'MSFT', 'SNAP']
for ticker in tickerStrings:
    data = yf.download(ticker, group_by="Ticker", period='1mo', interval='1d')
    data['ticker'] = ticker # add this column because the dataframe doesn't
    contain a column with the ticker
    data.to_csv(f'ticker_{ticker}.csv') # ticker_AAPL.csv for example
```

```
[*****100%*****] 1 of 1 completed
```

```
[*****100%*****] 1 of 1 completed
```

```
[*****100%*****] 1 of 1 completed
```

```
[ ]:
```

0.0.4 Using Pandas-DataReader

- pip install pandas-datareader

```
[1]: import pandas_datareader
```

```
[2]: dir(pandas_datareader)
```

```
[2]: ['DataReader',
      'Options',
      'PKG',
      '__all__',
      '__builtins__',
      '__cached__',
      '__doc__',
```

```
'__file__',
'__loader__',
'__name__',
'__package__',
'__path__',
'__spec__',
'__version__',
'_utils',
'_version',
'av',
'bankofcanada',
'base',
'compat',
'data',
'econdb',
'enigma',
'eurostat',
'exceptions',
'famafrench',
'fred',
'get_components_yahoo',
'get_dailysummary_iex',
'get_data_alphavantage',
'get_data_enigma',
'get_data_famafrench',
'get_data_fred',
'get_data_moex',
'get_data_quandl',
'get_data_stooq',
'get_data_tiingo',
'get_data_yahoo',
'get_data_yahoo_actions',
'get_iex_book',
'get_iex_data_tiingo',
'get_iex_symbols',
'get_last_iex',
'get_markets_iex',
'get_nasdaq_symbols',
'get_quote_yahoo',
'get_recent_iex',
'get_records_iex',
'get_summary_iex',
'get_tops_iex',
'iex',
'io',
'moex',
'nasdaq_trader',
```

```
'naver',  
'oecd',  
'os',  
'quandl',  
'stooq',  
'sys',  
'test',  
'tiingo',  
'yahoo']
```

```
[3]: # Method 1: using data and DataReader class  
import pandas_datareader.data as web
```

```
[4]: start_date = "2021-01-1"  
end_date = "2022-06-31"
```

```
[5]: help(web.DataReader)
```

Help on function DataReader in module pandas_datareader.data:

DataReader(name, data_source=None, start=None, end=None, retry_count=3,
pause=0.1, session=None, api_key=None)

Imports data from a number of online sources.

Currently supports Google Finance, St. Louis FED (FRED),
and Kenneth French's data library, among others.

Parameters

name : str or list of str

the name of the dataset. Some data sources (IEX, fred) will
accept a list of names.

data_source: {str, None}

the data source ("iex", "fred", "ff")

start : string, int, date, datetime, Timestamp

left boundary for range (defaults to 1/1/2010)

end : string, int, date, datetime, Timestamp

right boundary for range (defaults to today)

retry_count : {int, 3}

Number of times to retry query request.

pause : {numeric, 0.001}

Time, in seconds, to pause between consecutive queries of chunks. If
single value given for symbol, represents the pause between retries.

session : Session, default None

requests.sessions.Session instance to be used

api_key : (str, None)

Optional parameter to specify an API key for certain data sources.

Examples

```
# Data from Google Finance
aapl = DataReader("AAPL", "iex")

# Price and volume data from IEX
tops = DataReader(["GS", "AAPL"], "iex-tops")
# Top of book executions from IEX
gs = DataReader("GS", "iex-last")
# Real-time depth of book data from IEX
gs = DataReader("GS", "iex-book")

# Data from FRED
vix = DataReader("VIXCLS", "fred")

# Data from Fama/French
ff = DataReader("F-F_Research_Data_Factors", "famafrench")
ff = DataReader("F-F_Research_Data_Factors_weekly", "famafrench")
ff = DataReader("6_Portfolios_2x3", "famafrench")
ff = DataReader("F-F_ST_Reversal_Factor", "famafrench")
```

```
[8]: # Fetch data from yahoo finance api, iex is google but requires an API Key
df = web.DataReader(name="TWTR", data_source="yahoo")
```

```
[9]: df
```

```
[9]:
```

	High	Low	Open	Close	Volume	Adj Close
Date						
2017-07-11	18.660000	18.100000	18.139999	18.639999	18110900	18.639999
2017-07-12	19.540001	18.910000	18.920000	19.250000	30008100	19.250000
2017-07-13	19.670000	19.080000	19.540001	19.320000	17517400	19.320000
2017-07-14	19.969999	19.330000	19.350000	19.639999	20835500	19.639999
2017-07-17	20.240000	19.730000	19.799999	19.940001	24152800	19.940001
...
2022-07-01	38.240002	37.080002	37.380001	38.230000	6298000	38.230000
2022-07-05	38.639999	37.250000	38.180000	38.380001	8155700	38.380001
2022-07-06	38.450001	37.740002	38.209999	38.209999	4870300	38.209999
2022-07-07	39.509998	38.320000	38.320000	38.790001	13214900	38.790001
2022-07-08	37.549999	36.799999	37.509998	36.810001	26156700	36.810001

```
[1258 rows x 6 columns]
```

```
[10]: # columns
df.columns
```

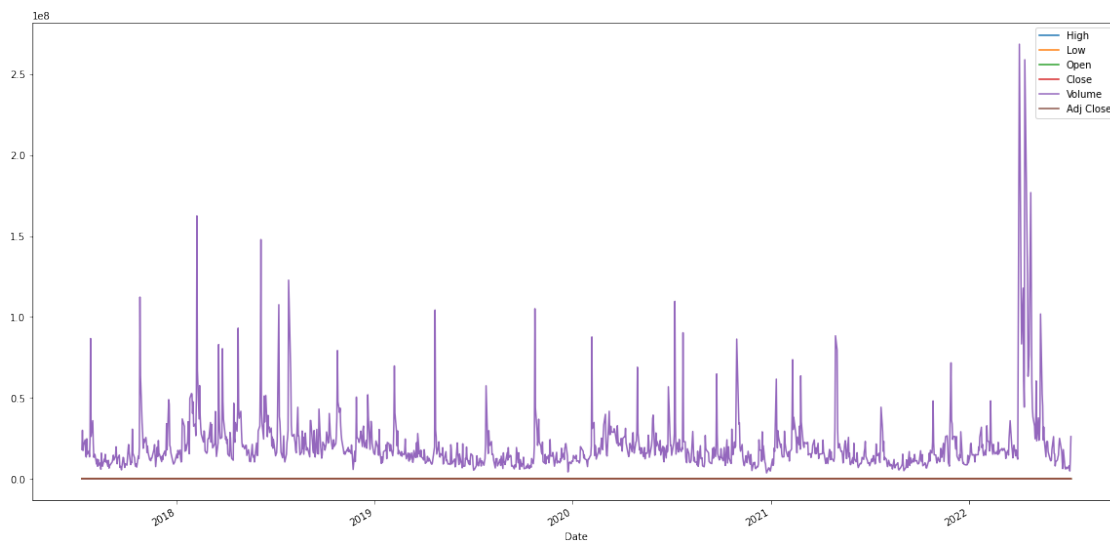
```
[10]: Index(['High', 'Low', 'Open', 'Close', 'Volume', 'Adj Close'], dtype='object')
```

```
[11]: df["Close"]
```

```
[11]: Date
2017-07-11    18.639999
2017-07-12    19.250000
2017-07-13    19.320000
2017-07-14    19.639999
2017-07-17    19.940001
...
2022-07-01    38.230000
2022-07-05    38.380001
2022-07-06    38.209999
2022-07-07    38.790001
2022-07-08    36.810001
Name: Close, Length: 1258, dtype: float64
```

```
[12]: # Plot
df.plot(kind="line",figsize=(20,10))
```

```
[12]: <AxesSubplot:xlabel='Date'>
```



```
[13]: ### Method 2
import pandas_datareader as pdr
```

```
[15]: df2 = pdr.get_data_yahoo('TSLA')
```

```
[16]: df2
```

```
[16]:
```

	High	Low	Open	Close	Volume \
Date					
2017-07-11	65.456001	62.860001	63.200001	65.444000	57797000.0
2017-07-12	66.620003	64.900002	66.080002	65.903999	51730500.0
2017-07-13	66.320000	63.993999	66.022003	64.681999	42972500.0
2017-07-14	65.683998	64.244003	64.638000	65.556000	28126000.0
2017-07-17	65.419998	62.689999	65.108002	63.914001	49384500.0
...
2022-07-01	690.690002	666.359985	681.000000	681.789978	24781500.0
2022-07-05	699.440002	648.500000	669.000000	699.200012	28193700.0
2022-07-06	703.690002	681.559998	692.340027	695.200012	23951200.0
2022-07-07	736.090027	696.630005	701.760010	733.630005	27310200.0
2022-07-08	764.940002	723.479980	727.000000	752.289978	33343700.0

```
Adj Close
```

Date	
2017-07-11	65.444000
2017-07-12	65.903999
2017-07-13	64.681999
2017-07-14	65.556000
2017-07-17	63.914001
...	...
2022-07-01	681.789978
2022-07-05	699.200012
2022-07-06	695.200012
2022-07-07	733.630005
2022-07-08	752.289978

```
[1258 rows x 6 columns]
```

```
[17]: ##### Thanks For Your Time
##### Jesus Saves @JCharisTech
##### Jesse E.Agbe(JCharis)
##### 2022
```

```
[ ]:
```